

A USEFUL TAXONOMIC DISTINCTION BETWEEN TWO SIMILAR CYCHRINE BEETLES (COLEOPTERA: CARABIDAE)

RICHARD L. HOFFMAN

Virginia Museum of Natural History, Martinsville, Virginia 24112.

Abstract.—*Scaphinotus (Stenaridia) ridingsi* (Bland) differs from its very similar sympatric congener *S. adrewsii* (Harris) by having only three distal macrosetae on the penultimate maxillary podomere instead of four (the normal number for this genus).

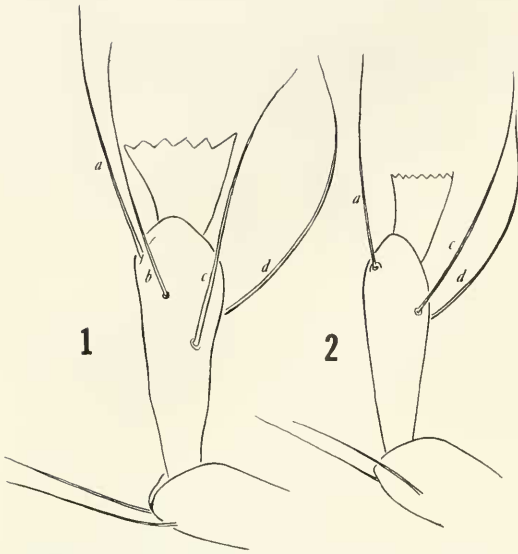
Key Words: Cychrini, Carabidae, taxonomy, palpal setae

Around the year 1959 Donald R. Whitehead was developing an interest in diplopods about the same time I was starting to collect carabid beetles. It is not surprising that our paths soon crossed or that our shared hobbies kept us in touch for many years. Don was the person who showed me how to “splash” for streamside carabids, during a visit with me in Blacksburg, Virginia, and on the following day we collected some of the paratypes of the subsequently described *Cyclotrachelus iuvenis* (Freitag). I thought at first to contribute a milliped paper to this memorial issue, but inasmuch as the Carabidae was really Don’s first love it seemed that something about ground beetles would be more appropriate. It is a matter of regret that his interest in millipeds never became a productive one. . . . he collected an enormous quantity of specimens in Mexico and it is a pity he did not publish on some of the more interesting finds.

As Don was well-aware, there remained plenty of fine-tuning to be done with the carabids of Virginia—not just with biological aspects but also with distribution and even taxonomy—and he encouraged me to work toward an eventual faunistic study of the state’s ground beetles. A problem which surfaced early in the work involved recognition of two local species of cychrines. Its

solution, summarized in the following paragraphs, was not reached for nearly twenty years and even then only by utter serendipity.

The cychrine genus *Scaphinotus* is represented in Virginia by species referable to the three subgenera *Scaphinotus*, *Irichroa*, and *Stenaridia*, of which the last-named contains seven species more or less localized in and around the southern Blue Ridge. The group was the subject of careful reviews by J. M. Valentine (1935, 1936) and a biogeographical discussion by Barr (1969). Valentine distinguished species and species-groups primarily on the basis of male (aedoeagal and tarsal) characters, but his key to species relied at one couplet on body size and elytral sculpture. Thus, in what might be called the “Andrewsii Group,” *S. (S.) ridingsi* was set off from *aeneicollis*, *andrewsii*, and *tricarinatus* by its smaller size (less than 20 mm) and discrete elytral intervals. Valentine’s qualifying statement “. . . if smaller than 23 mm elytral costae interrupted and confluent on the marginal and posterior disc” is not infallible since small specimens of *andrewsii* are in fact not modified as described. As a result, in areas such as western Virginia, where *andrewsii* and *ridingsi* coexist, it is difficult to distinguish small females of the former from large



Figs. 1, 2. Penultimate palpomeres of maxillary palpus in two species of *Scaphinotus* (*Stenaridia*), dorsal aspect, showing distribution of macrosetae *a-d*. 1, *S. andrewsii* Harris with typical number of four setae. 2, *S. ridingsi* Bland, setal pattern with seta *b* apparently lost.

females of the latter (all coleopterists know the frequency with which specimens cluster around a supposed size-difference value).

Entirely by accident I recently happened to notice a good unisex character which seems to separate these two species in a satisfactory way, namely the number of setae on the penultimate article of the maxillary palp. In *andrewsii* (and all other species of *Stenaridia* that I have seen) the typical number is four, dispersed in the pattern illustrated (Fig. 1). In *ridingsi*, there are only three setae, and judged from positional homology, it is the seta arbitrarily identified as "b" which is lost from this species. My colleague, Robert L. Davidson, upon learning about this setal character, had the opportunity to examine a number of additional species of *Stenaridia* in the Carnegie Museum collection and advised me (in litt.) that all conformed to the generalized number of four except for *S. (S.) loedingi* Valentine which agrees with *ridingsi* in the reduction to three. In this case, however, the

relationship between *andrewsii* and *loedingi* is more remote, as indicated by the notably flattened elytra of *loedingi* and differences in its tarsal and genital structure which induced Valentine to place the two species in different subgeneric groups. The setal loss is apparently a case of homoplasy rather than a synapomorphy insofar as these two species are concerned.

According to Valentine's classification, it is the subspecies *S. ridingsi intermedia* Valentine and *S. a. germari* (Chaudoir) which are sympatric in the Ridge and Valley Province of western Virginia and adjoining West Virginia. In my experience, *ridingsi* is by far the less-encountered of the two, and it is certainly less arboreal than *andrewsii* which can usually be found by peeling bark from dead trees and scanning tree trunks at night with a flashlight.

The overall external similarity of the two strongly suggests a very close, perhaps sister-group, relationship. *S. ridingsi* is doubtless a derivative form, as suggested by the apomorphic loss of a palpal seta and reduction of the complex aedoeagal transfer apparatus.

I am pleased to acknowledge the kindness of my colleagues George E. Ball (University of Alberta) and Robert L. Davidson (Carnegie Museum), as well as an anonymous reviewer selected by the journal, in reading over an early draft of this essay and suggesting some useful improvements.

LITERATURE CITED

- Barr, T. C., Jr. 1969. Evolution of the Carabidae (Coleoptera) in the Southern Appalachians, pp. 67-92. In Holt, P. C., ed., The Distributional History of the Biota of the Southern Appalachians. Part 1: Invertebrates. Virginia Polytechnic Institute, Research Division Monograph 1, Blacksburg.
- Valentine, J. M. 1935. Racialization in *Stenaridia*, a group of cychrine beetles (Family Carabidae, Genus *Scaphinotus*). Journal of the Elisha Mitchell Scientific Society 51: 341-375.
- . 1936. Racialization in *Stenaridia andrewsii* Harris, a supplement to speciation in *Stenaridia*. Journal of the Elisha Mitchell Scientific Society 52: 223-234.